INCH-POUND

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SUPERSEDING
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AND CHANGE 1
OCTOBER 1986

DEPARTMENT OF DEFENSE
HANDBOOK

WEIGHT HANDLING EQUIPMENT

AMSC N/A AREA FACR

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

Section 9: CRANE INFORMATION FORMS

9.1 Main Crane Types. Appendices A, B, and C are sample Crane Information Forms for the most frequently procured crane types for Navy activities. The appropriate form must be completed by the customer activity prior to the preparation of the crane procurement specification by The Navy Crane Center.

Appendix A – All limiting dimensions, clearances, access platforms, and interference's with load hooks in their operating envelope (such as the diagonal runway column brace in Sketch A-4) that affect crane design, must be shown on the sketches. For design of new buildings, typical crane dimensions and required clearances may be obtained from the Whiting Crane Handbook.

Appendix B – For underrunning cranes, the existing runway or the building support structure and anchor points for a new runway, must be shown in detail. Since underrunning cranes are primarily standard commercial products, manufacturers' catalogs should be reviewed to ascertain various configurations, dimensions, and the required clearances.

Appendix C – It is desirable to have the portal cranes delivered nearly fully assembled on a barge. Consequently, the off-loading location on the waterfront must be identified and fully described. Alternatively, if extensive assembly/erection at the site is envisioned, that area must be clearly marked. Sketch C-1 is intended for that purpose. Additionally, clearance envelopes at the level of travel trucks and above must be outlined. The curves in the rail system layout must be accurately defined in order to establish the required travel truck float.

9.1.1 Other Crane Types. Similar forms and sketches must be prepared by the customer activity for other crane types, using the sample forms as a guide for the appropriate information and level of detail, to procure a crane design suitable for the operational requirements and fully adapted to the site conditions.

APPENDIX A

Sample Crane Information Form for
Overhead Electric Traveling Crane(s)

Date_____

1. PROJECT INITIATION LETTER _____

2. REQUIREMENT VALIDATED BY _____
Name Signature

3. USING ACTIVITY _____

_____

4. BUILDING INFORMATION:

a) Building name (and number) _____

b) Room or area of crane location _____

5. NUMBER OF IDENTICAL CRANES REQUIRED _____
(If cranes are not identical, prepare a separate form for each crane)

6. RATED CAPACITY:

a) Main/auxiliary hoist _____ tons (short)

b) Bridge _____ tons (short)

7. CRANE DESIGN:

a) CMAA #70 Class _____ or

Approximate main hoist lifts per 8-hour shift:

Number of rated capacity lifts _____
Number of 75% rated capacity lifts _____
Number of 50% rated capacity lifts _____
Number of 25% rated capacity lifts _____

b) Desired speed ranges: high/low (feet per minute)

Main hoist _____/_____
Auxiliary hoist _____/_____
Trolley _____/_____
Bridge _____/_____

8. CRANE SERVICE: (Check and fill-in appropriate items.)

a) General Purpose Service (GPS): Yes_____ No_____
(If “no”, see Section 6.)

b) Special Purpose Service (SPS): Yes_____

Captivation and containment required? Yes_____ No_____

c) Hazardous/Explosive Environment: Yes_____

Spark protection required: Minimum_____Additional_____Maximum_____

NEC Class_____ Division_____ Group_____

Height above floor that protection is required: _____

d) Hot (Molten) Metal Service: Yes_____

e) Ordnance/Explosives Handling: Yes_____

f) Brief explanation of the operating procedure: _____

_____

_____

9. OPERATOR CONTROLS: (Specify)

a) Cab _____ (On bridge _____ On trolley _____)

b) Floor/Pendent (On trolley _____ On messenger track _____)
(Fixed _____ Retractable _____)

c) Portable (Radio _____ Infrared _____)

d) Wall _____

e) Lockable _____

f) Other (Explain)_____

10. ELECTRICAL CONTROL SYSTEM: (Specify in detail)

AC variable frequency or fixed speed point;
DC load-sensitive or fixed speed points;
Number of speed points; speed points cutouts –

Main hoist _____

Auxiliary hoist _____

Trolley _____

Bridge _____

11. OPERATING ENVIRONMENT:

a) Indoor _____ Outdoor _____ Both _____

b) Ambient temperatures (High_____ Low_____)

c) Environment classification:

Non-hazardous _____ Dusty _____ Sand blast _____

Corrosive _____

If corrosive, specify the nature of fumes or vapors _____

_____

12. OPERATOR'S CAB:

a) Open _____ Fan _____

b) Enclosed (Heated _____ Air Conditioned _____ Fan _____)

c) Lockable _____

d) Access (from the crane _____ from the building _____)

13. RUNWAY END STOPS:

a) Existing _____ New (to be provided) _____
(If existing, show on sketches)

b) Is there another crane on the runway? _____
(If existing, show location of the electrical junction box and provide description of bumpers or striker plates)

14. RUNWAY ELECTRIFICATION:

a) Existing _____ New (to be provided) _____
(If existing, show location on sketches and provide description, rating, and manufacturer's name.)
(If new, show location of the electrical junction box and provide circuit size.)

15. SPECIAL REQUIREMENTS:

a) Are floodlights required under the bridge girders?_____

b) Are drip pans required under any components?_____

c) Is any special paint required? _____

d) Is fungus resistance treatment required for any electrical components?
_____

e) Is radio interference suppression required? _____Class_____

f) Will the crane pass through doors?_____

g) Are anti-collision interlocks required?_____

h) Are there any other conditions or operational requirements that should be considered in the design and fabrication of the crane(s)?

_____

_____

_____

_____

Provide sketches and complete description for all of the above features that apply. Add any other features or requirements that may be appropriate.

16. INSTRUCTIONS FOR CLEARANCE SKETCH AND FLOOR PLAN:

a) The “C” dimension is measured from the top of the rail to the lowest overhead obstruction (bottom chord of truss, light fixtures, beams, knee braces, ducts, pipes, conduits, etc.)

b) Loads “K” and “P” are the wheel loads (without impact), and dimensions “L”, “M”, “N”, and “Q” are the spacings that were used for the design of the runway girders.

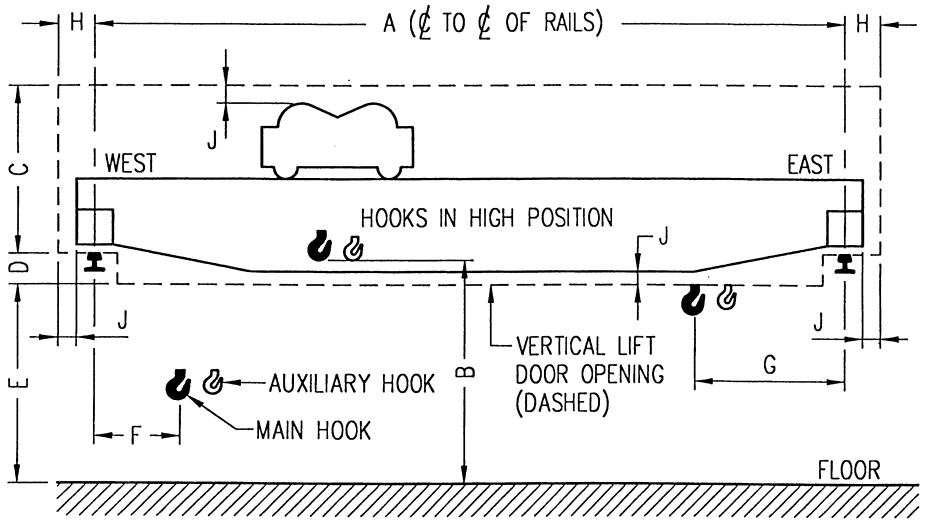
c) If the particular runway girder is of a different construction than shown on the clearance sketch, provide a new sketch showing the appropriate details of the girder.

d) Show the cardinal compass directions.

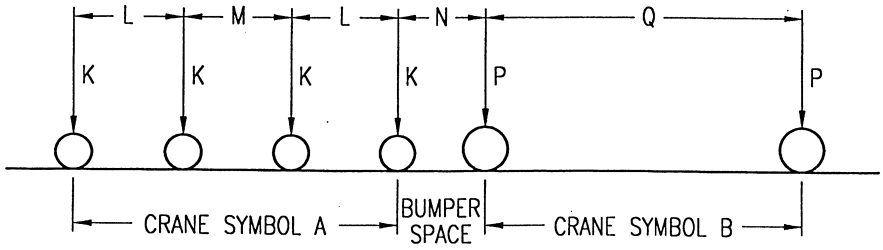
e) Show the required load hook approaches, of both hoists, at each end of runway and ends of the crane bridge.

f) Show access platform(s) to the crane.

g) Show runway girder support columns and spacing.

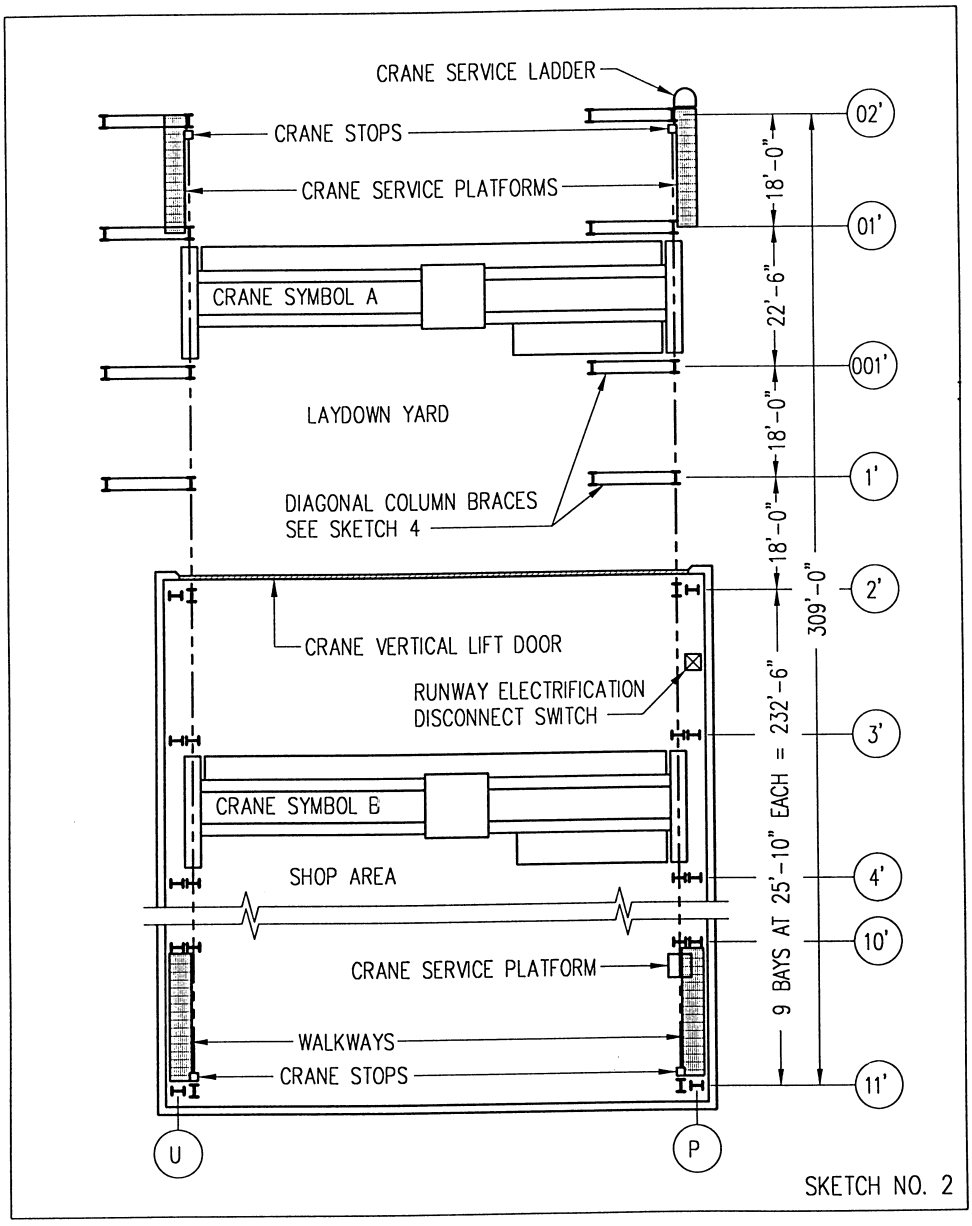


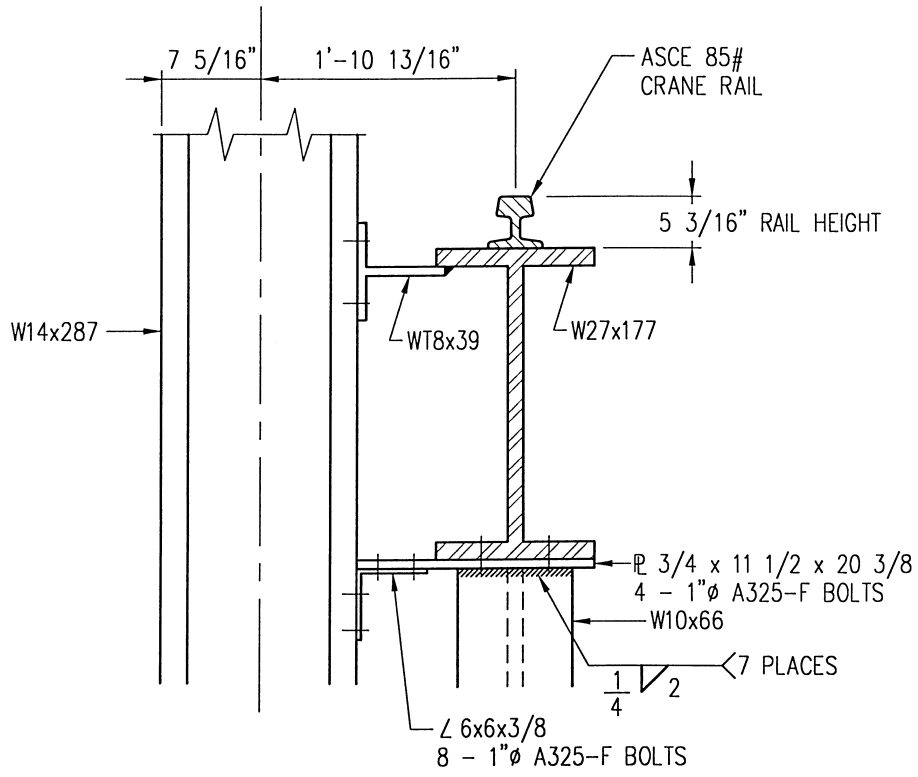
A 78'-7 5/8"	F 4'-6"	L 5'-3"
B 38'-0" (MIN)	G 8'-0"	M 5'-0"
C 9'-8"	H 1'-0"	N 3'-0"
D 4'-0"	J 0'-3" (MIN)	P 82.2 KIPS
E 36'-10"	K 51.2 KIPS	Q 17'-0"



K AND P ARE THE WHEEL LOADS USED FOR DESIGN OF RUNWAY GIRDERS, EXCLUDING IMPACT, SPACED AS INDICATED.

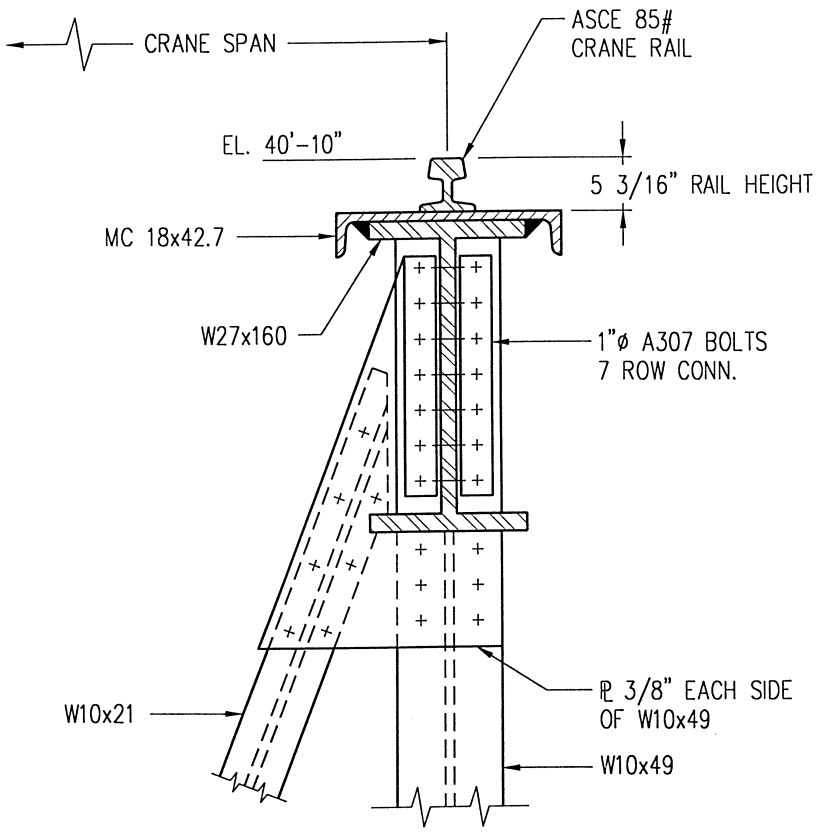
SKETCH NO. 1


CRANE SERVICE LADDER
CRANE STOPS
CRANE SERVICE PLATFORMS
CRANE SYMBOL A
LAYDOWN YARD
DIAGONAL COLUMN BRACES
SEE SKETCH 4
CRANE VERTICAL LIFT DOOR
RUNWAY ELECTRIFICATION
DISCONNECT SWITCH
CRANE SYMBOL B
SHOP AREA
CRANE SERVICE PLATFORM
WALKWAYS
CRANE STOPS
02'
01'
001'
1'
2'
3'
4'
10'
11'
18'-0"
22'-6"
18'-0"
18'-0"
309'-0"
9 BAYS AT 25'-10" EACH = 232'-6"
U
P
SKETCH NO. 2



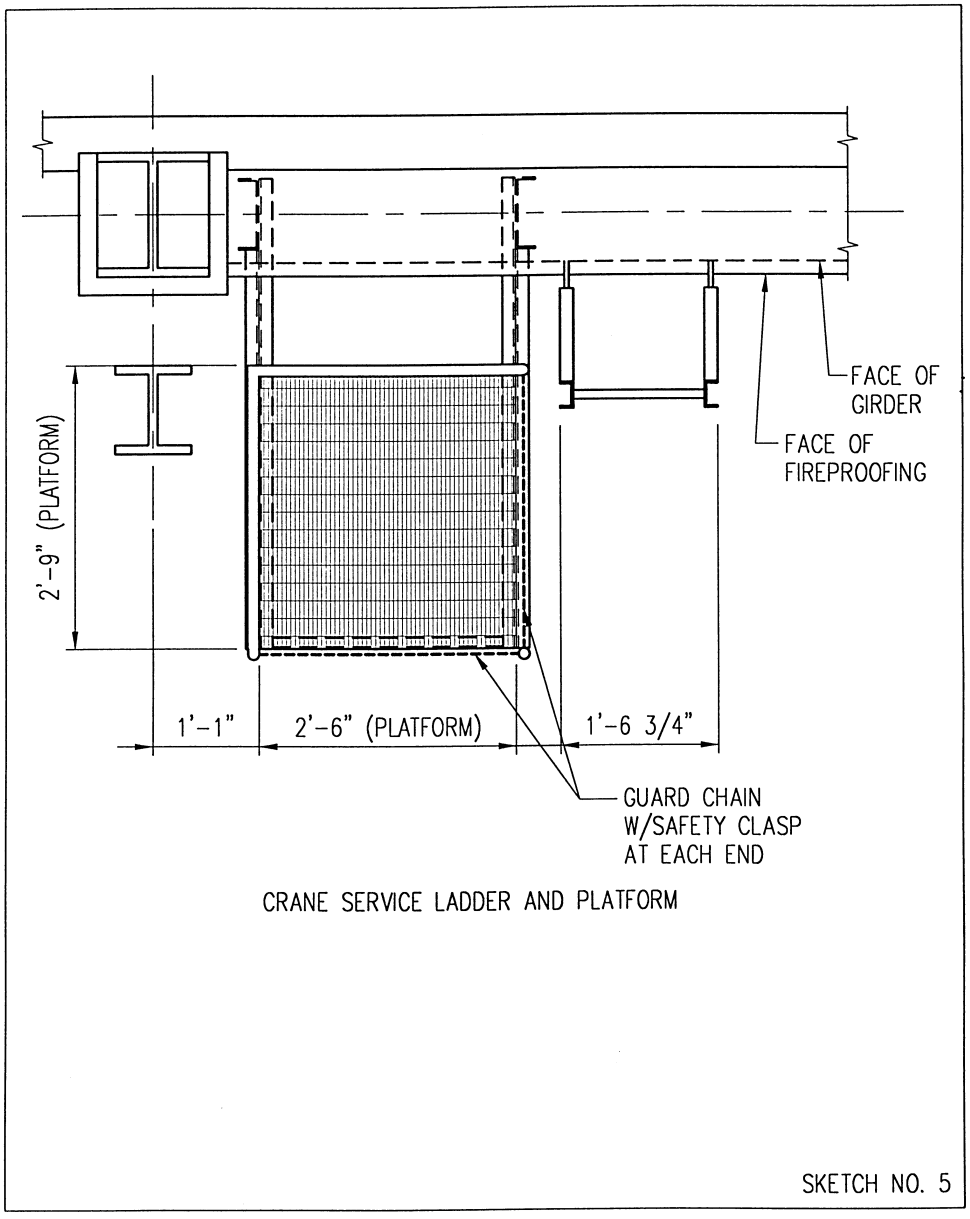
INTERIOR CRANE RUNWAY SECTION (TYP)

SKETCH NO. 3



COLUMN AND BRACING IN LAYDOWN AREA (TYP)

SKETCH NO. 4



CRANE SERVICE LADDER AND PLATFORM

SKETCH NO. 5

APPENDIX B

Sample Crane Information Form for
Underrunning (Single Girder) Crane(s)

Date_____

1. PROJECT INITIATION LETTER _____

2. REQUIREMENT VALIDATED BY _____
Name Signature

3. USING ACTIVITY _____

_____

_____

4. BUILDING INFORMATION:

a) Building name (and number) _____

b) Room or area of crane location _____

5. NUMBER OF IDENTICAL CRANES REQUIRED _____
(If cranes are not identical, prepare a separate form for each crane)

6. RATED CAPACITY:

a) Hoist/trolley unit _____ tons (short)

b) Bridge _____ tons (short)

7. CRANE DESIGN:

a) CMAA #74 Class _____ bridge structure

b) ANSI MH27.1 Class _____ bridge structure

c) ANSI/ASME HST-4M Duty Class _____ hoist/trolley unit

Or

Approximate main hoist lifts per 8-hour shift:

Number of rated capacity lifts _____
Number of 75 percent rated capacity lifts _____
Number of 50 percent rated capacity lifts _____
Number of 25 percent rated capacity lifts _____

b) Desired speed ranges: high/low (feet per minute)

Hoist _____

Trolley _____

Bridge _____

8. CRANE SERVICE: (Check and fill-in appropriate items.)

a) General Purpose Service (GPS): Yes_____ No_____
(If "no", see Section 6)

b) Special Purpose Service (SPS): Yes_____

Captivation and containment required? Yes_____ No_____

c) Hazardous/Explosive Environment: Yes_____

Spark protection required: Minimum_____Additional_____Maximum_____

NEC Class _____ Division _____ Group _____

Height above floor that protection is required: _____

d) Hot (Molten) Metal Service: Yes_____

e) Ordnance/Explosives Handling: Yes_____

f) Brief explanation of the operating procedure: _____

_____

_____

9. OPERATOR CONTROLS: (Specify)

a) Floor/Pendent (On trolley _____ On messenger track _____)

b) Portable (Radio _____ Infrared _____)

c) Wall _____

d) Lockable _____

e) Other (Explain) _____

10. ELECTRICAL CONTROL SYSTEM: (Specify in Detail)

AC variable frequency or fixed speed point; DC load-sensitive or fixed speed points; number of speed points; speed point cutouts

Hoist _____
Trolley _____
Bridge _____

11. OPERATING ENVIRONMENT:

a) Indoor _____ Outdoor _____ Both _____

b) Ambient temperatures (High _____ Low _____)

c) Environment classification:

Non-hazardous _____ Dusty _____ Sand blast _____

Corrosive _____

If corrosive, specify: the nature of fumes or vapors_____

_____

12. RUNWAY END STOPS:

a) Existing _____ New (to be provided) _____
(If existing, show on sketches)

b) Is there another crane on the runway? _____
(If existing, show location on sketches and provide description of bumpers or striker plates)

13. RUNWAY ELECTRIFICATION:

a) Existing _____ New (to be provided) _____
(If existing, show location on sketches and provide description, rating, and manufacturer's name)

(If new, show location of the electrical junction box and provide circuit size.)

14. SPECIAL REQUIREMENTS:

a) Are drip pans required under any components?_____

b) Is any special paint required?_____

c) Is fungus resistance treatment required for any electrical components?
_____

d) Is radio interference suppression required? _____Class_____

e) Will the crane pass through doors?_____

f) Will the crane cross over to another runway?_____

g) Will the hoist/trolley unit cross over to another crane bridge?_____

h) Are the cross-over interlocks to be manual or electrically operated?_____

i) Are anti-collision interlocks required?_____

j) Are there any other conditions or operational requirements that should be considered in the design and fabrication of the crane(s)?_____
_____
_____

15. INSTRUCTIONS FOR CLEARANCE SKETCH AND FLOOR PLAN:

a) For a new runway (included in the crane contract), show the location and maximum allowable loads (without impact) on the overhead support points.

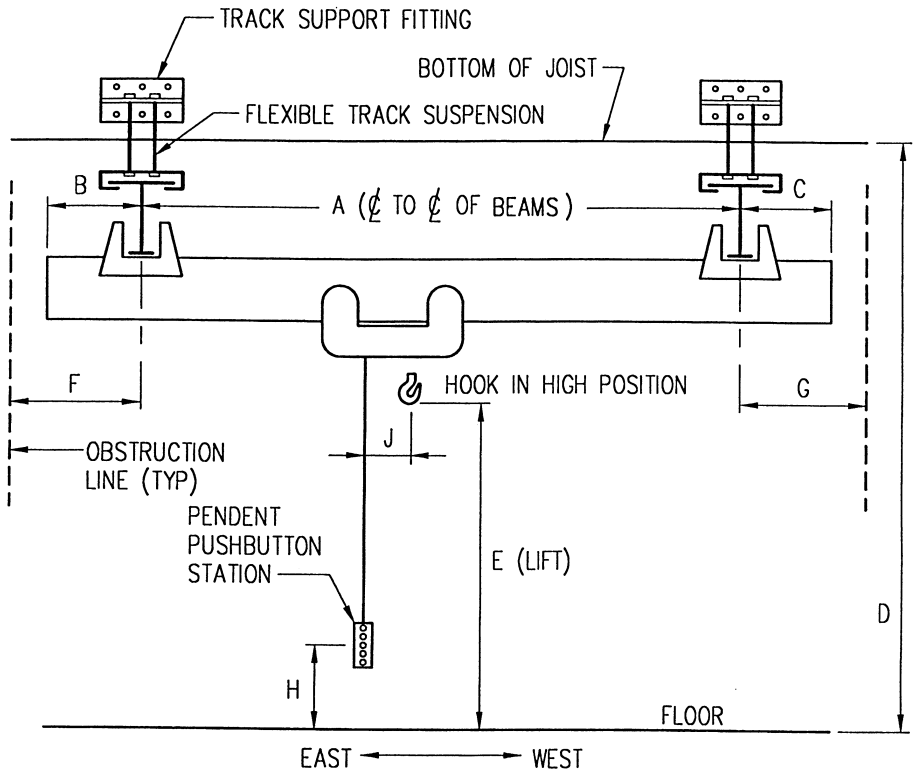
b) Show the transfer section locations and details.

c) If the particular runway girder is a structural section rather than patented track beam, identify the section shape and grade of steel.

d) Show the nominal compass directions.

e) Show the required load hook approaches at each end of runway and ends of the crane bridge.

f) Show runway girder bracing locations and description.



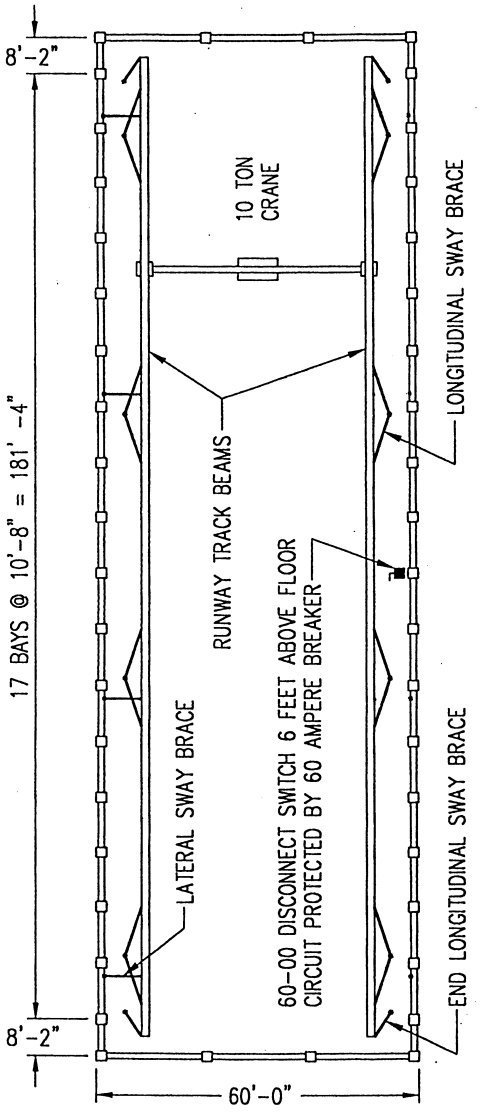
A 48'-0"	D 25'-8 1/2"	G 3'-6"
B 3'-0"	E 14'-6" (MIN)	H 4'-0"
C 3'-0"	F 3'-6"	J 4'-0" (MIN)

MAXIMUM SPAN OF RUNWAY TRACK BEAMS: 10'-8"

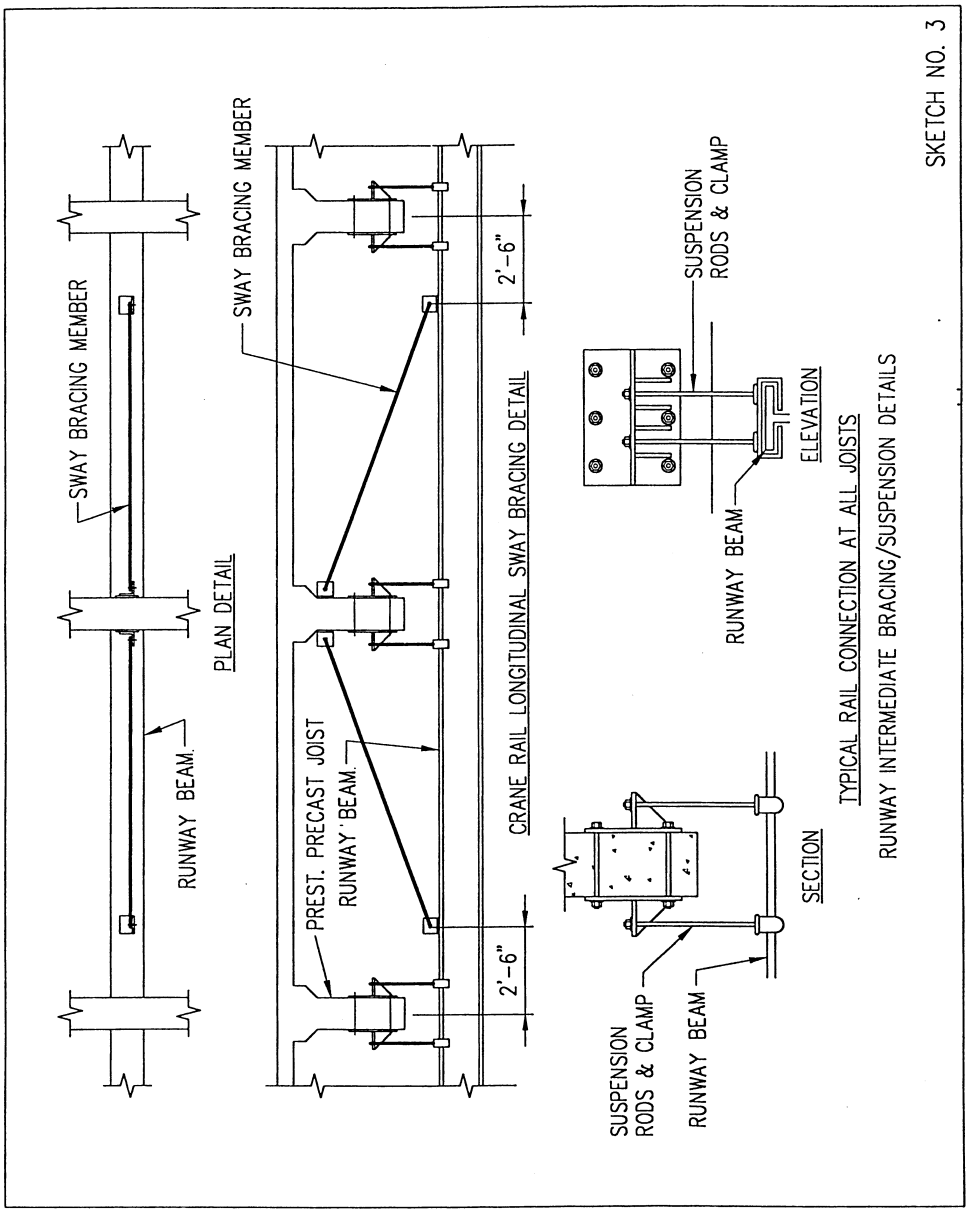
MAXIMUM ALLOWABLE LOAD AT RUNWAY TRACK BEAM SUPPORT POINT (EXCLUDING IMPACT): 18,550 LBS

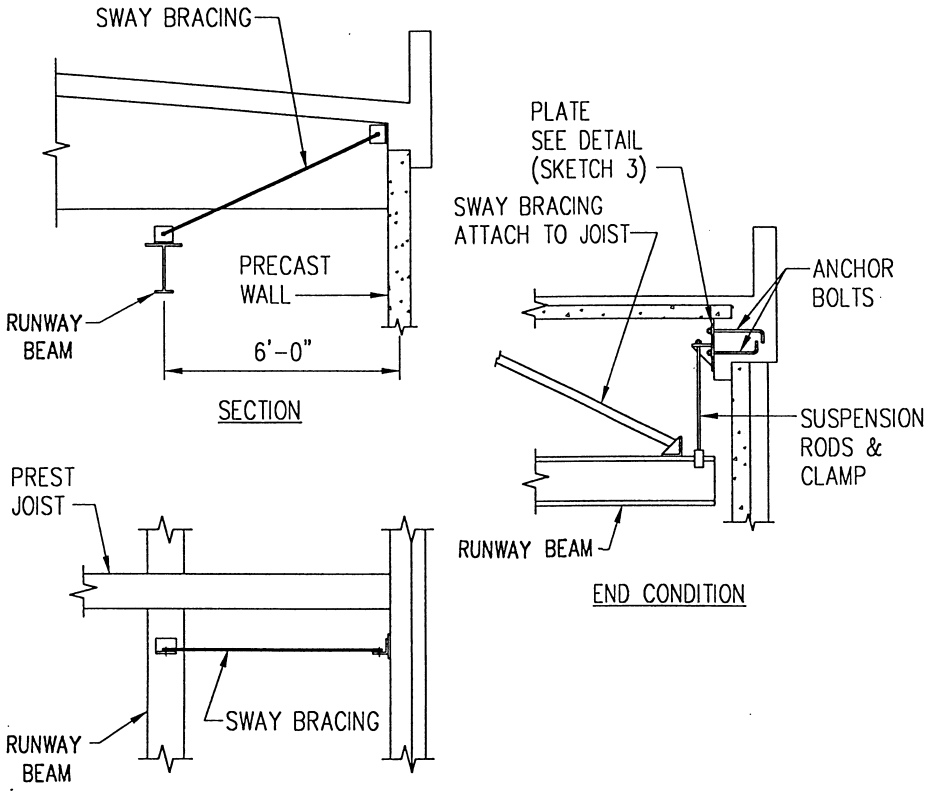
SKETCH NO. 1

SKETCH NO. 2



CRANE RUNWAY PLAN AND SWAY BRACE LOCATIONS


SWAY BRACING MEMBER
RUNWAY BEAM
PLAN DETAIL
SWAY BRACING MEMBER
PREST. PRECAST JOIST
RUNWAY BEAM
2'-6"
2'-6"
CRANE RAIL LONGITUDINAL SWAY BRACING DETAIL
SUSPENSION
RODS & CLAMP
RUNWAY BEAM
ELEVATION
SUSPENSION
RODS & CLAMP
RUNWAY BEAM
SECTION
TYPICAL RAIL CONNECTION AT ALL JOISTS
RUNWAY INTERMEDIATE BRACING/SUSPENSION DETAILS
SKETCH NO. 3



CRANE RAIL TRANSVERSE SWAY BRACING DETAIL

RUNWAY TRANSVERSE AND END BRACING/SUSPENSION DETAILS

SKETCH NO. 4

APPENDIX C

Sample Crane Information Form for
Portal Cranes

Date_____

1. PROJECT INITIATION LETTER_____

2. REQUIREMENT VALIDATED BY _____
Name Signature

3. USING ACTIVITY _____

_____

_____

4. SITE INFORMATION: (Provide site plan)

a) Location (pier, wharf, drydock)
_____

b) Erection or off-loading point
_____

c) Clearances along the entire operational rail circuit for the crane(s). (Provide clearance profiles to the nearest obstructions along the rail circuit.)

d) Straight track gauges _____/_____ (feet/inches)

e) Minimum inner rail radius _____/_____ (feet/inches)

f) Rail size _____ (pounds/yard)

g) Maximum allowable wheel load and spacing _____/_____ (pound and inches) (Due only to the dead load and rated hook load)

5. NUMBER OF IDENTICAL CRANES REQUIRED: _____
(If cranes are not identical, prepare a separate form for each crane)

6. RATED CAPACITY AND MAXIMUM REACH: (Straight-line rated cranes)

a) Main hoist _____/_____ (short tons/feet)

b) Auxiliary hoist _____/_____ (short tons/feet)
(When justified, normally not provided)

c) Whip hoist _____/_____(short tons/feet)
(Specify the desired minimum reach for a particular hoist, which will govern the minimum reach(es) of the other hoist(s).

(For variably rated cranes, provide specific combinations of capacity and reach that are required for each hoist.)

7. HOOK LIFTING RANGES: (Above tope of rails/radius.)

a) Main hoist _____/_____ (feet)

b) Auxiliary hoist _____/_____ (feet)

c) Whip hoist _____/_____ (feet)

d) All hooks, below top of rails at minimum radius _____/_____ (feet)

8. SPEEDS: (High/low at rated capacity)

a) Main hoist _____/_____(feet per minute)

b) Auxiliary hoist _____/_____ (feet per minute)

c) Whip hoist _____/_____ (feet per minute)

d) Luffing hoist _____/_____ (minutes from maximum to minimum radius)

e) Travel _____/_____ (feet per minute)

f) Rotate _____/_____ (revolutions per minute)

9. DRIVE CONTROL SYSTEM: (Specify in detail for each drive.)

DC load-sensitive or fixed speed points; or hydraulic with fixed speed points or variable. Indicate the number of speed points, drift points, quarter speed range, motion jogging, or other desired characteristics.

Main hoist_____
Auxiliary hoist (if provided)_____
Whip hoist_____
Luffing hoist_____
Travel_____
Rotate_____

10. DIMENSIONAL REQUIREMENTS:

a) Boom hinge pin height _____/_____ (feet/inches) above top of rails.

b) Minimum clearance under portal base _____/_____ (feet/inches)

c) Minimum clearance between portal base legs _____/_____ (feet/inches)

d) Maximum tail swing _____/_____ (feet/inches)

11. CRANE SERVICE: (Check and fill-in appropriate items.)

a) General Purpose Service (GPS): Yes _____ No _____
(If “no”, see Section 6)

b) Special Purpose Service (SPS): Yes _____

Captivation and containment required? Yes _____ No _____

c) Ordnance/Explosives Handling: Yes _____

d) Longshoring: Yes _____

e) Brief explanation of the operating procedure: _____

_____

_____

12. OPERATING ENVIRONMENT:

a) Ambient temperatures (High _____ Low _____)

b) Sand blast (Yes _____ No _____)

c) Back-up shore power operation (Yes _____ No _____)
(If yes, describe the power characteristics)_____

_____

13. SPECIAL REQUIREMENTS:

a) Is any special paint required?_____

b) Is fungus resistance treatment required for any electrical components?_____

c) Is radio interference suppression required?_____Class_____

d) Is there a requirement for simultaneous operation with two hooks? Yes _____ No _____ (If yes, explain)_____

_____

_____

e) Are there any other conditions or operational requirements that should be considered in the design and fabrication of the crane(s)?

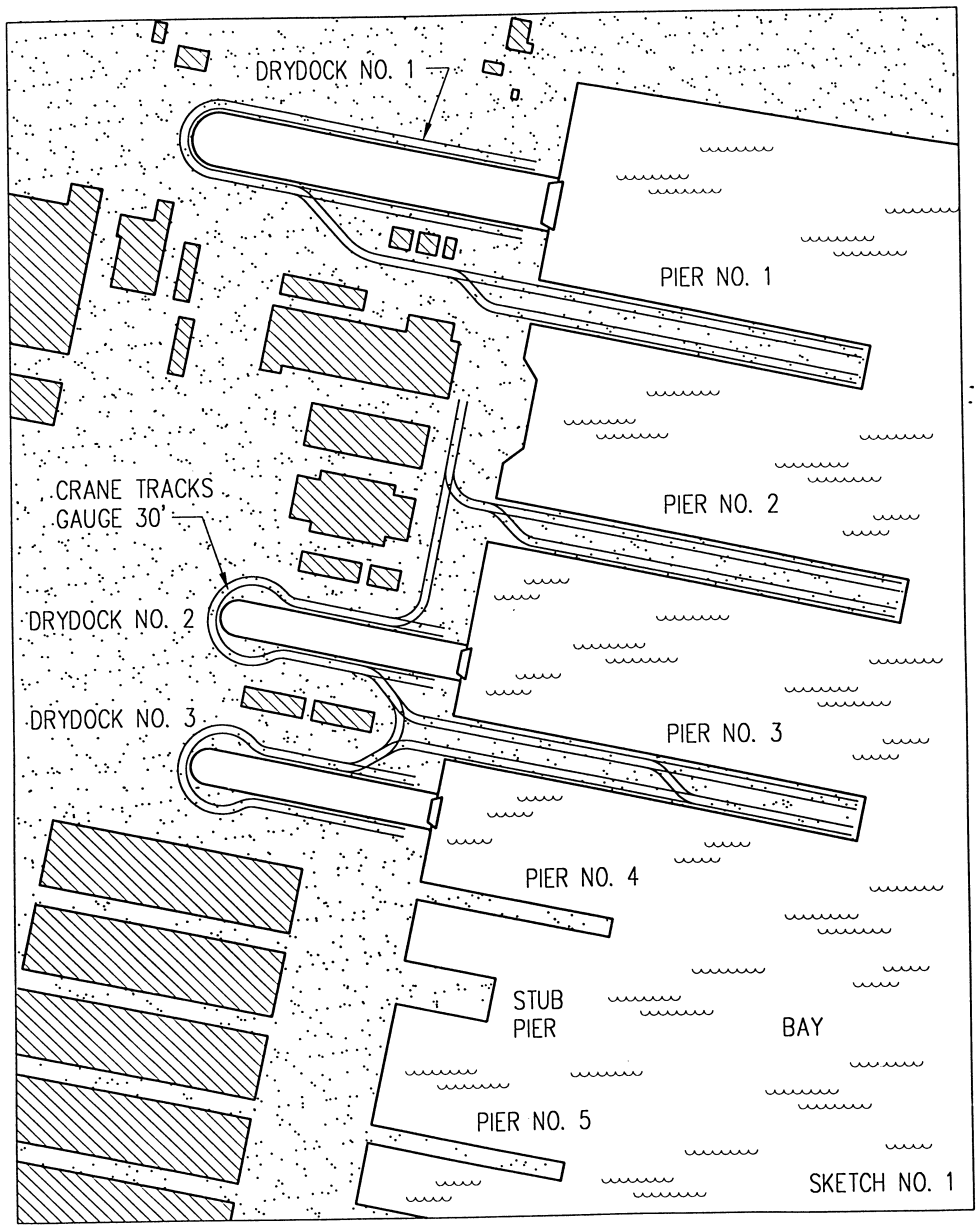
_____

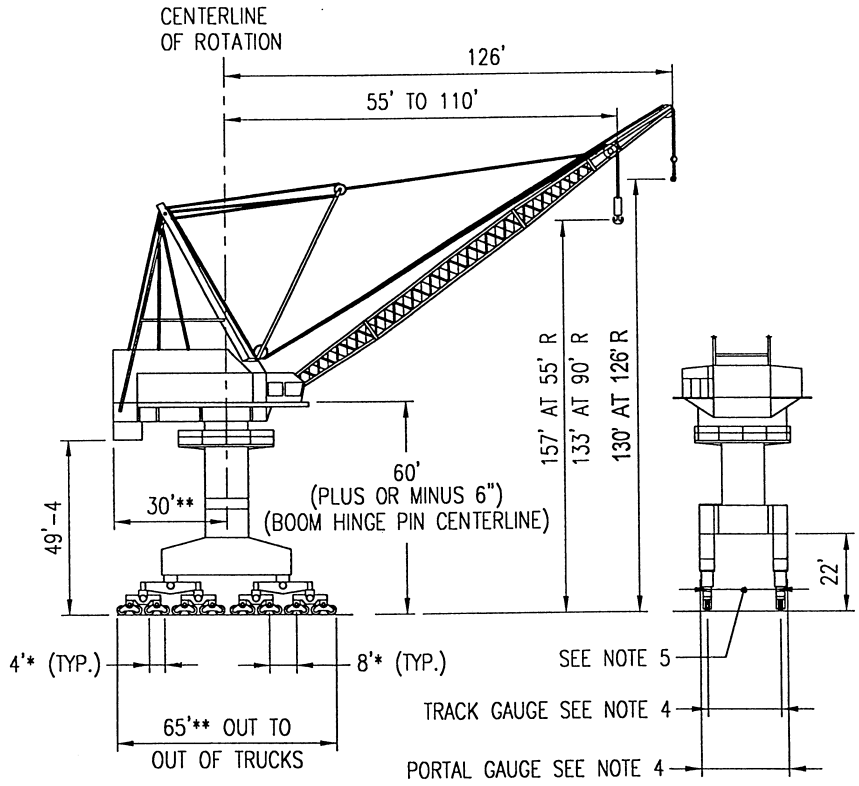
_____

_____

_____

Provide sketches and complete description for all of the above features that apply. Add any other features or requirements that may be appropriate.

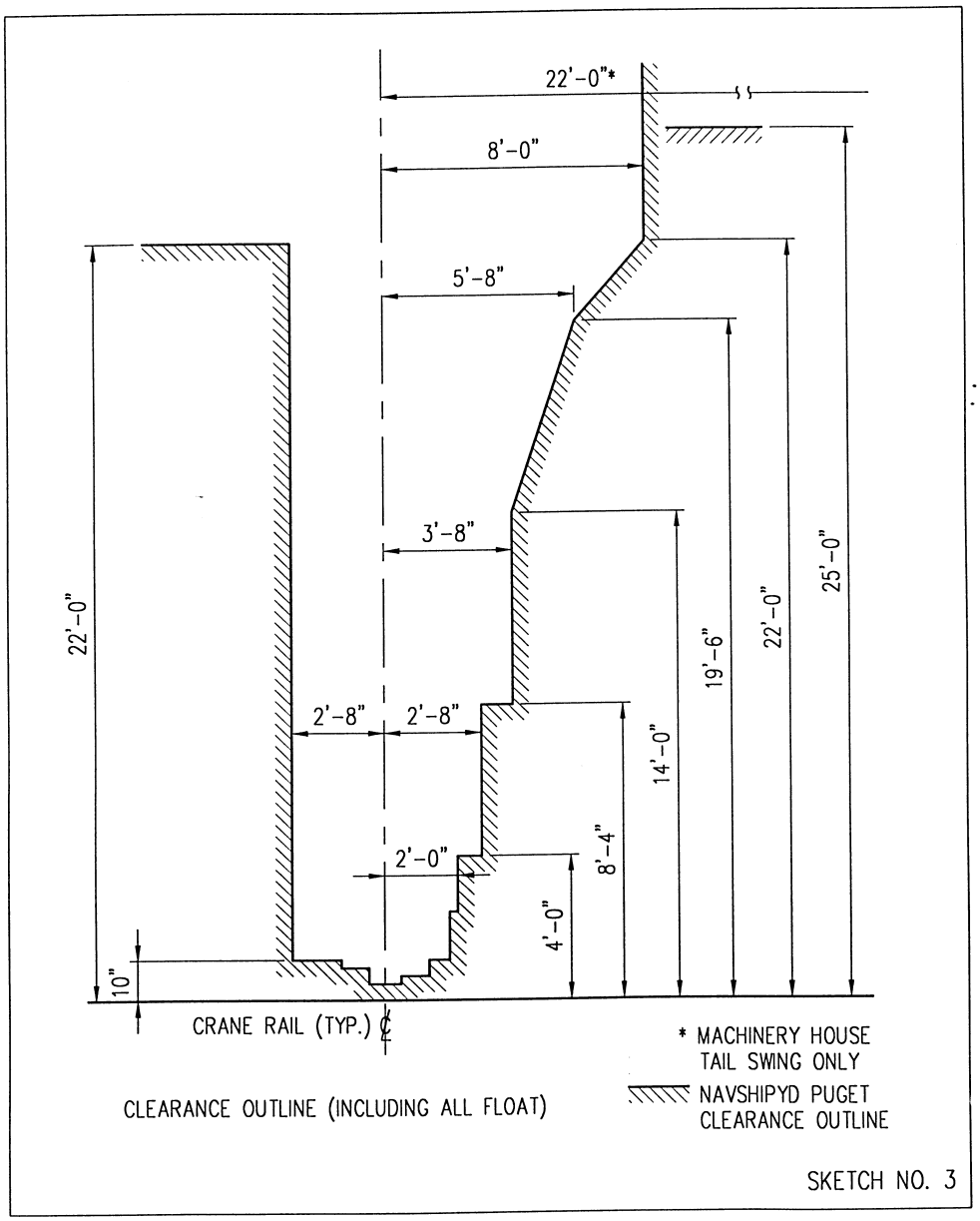

DRYDOCK NO. 1
PIER NO. 1
PIER NO. 2
CRANE TRACKS
GAUGE 30'
DRYDOCK NO. 2
DRYDOCK NO. 3
PIER NO. 3
PIER NO. 4
STUB
PIER
BAY
PIER NO. 5
SKETCH NO. 1



NOTES:
1. ALL DIMENSIONS ARE IN FEET; AND UNLESS NOTED OTHERWISE, ARE THE MINIMUM REQUIRED.
2. A SINGLE ASTERISK (*) INDICATES EXACT DIMENSIONS REQUIRED.
3. A DOUBLE ASTERISK (**) INDICATES DIMENSIONS TO BE MAXIMUM ALLOWED.
4. PORTAL AND TRACK GAUGES VARY WITH EACH NAVAL SHIPYARD.
5. CLEARANCE BETWEEN PORTAL BASE LEGS VARIES WITH EACH NAVAL SHIPYARD.

DIMENSIONS AND DESIGN CONCEPT

SKETCH NO. 2


22'-0"*
8'-0"
5'-8"
3'-8"
2'-8"
2'-8"
2'-0"
22'-0"
10"
4'-0"
8'-4"
14'-0"
19'-6"
22'-0"
25'-0"
CRANE RAIL (TYP.) ℄
* MACHINERY HOUSE TAIL SWING ONLY
NAVSHIPYD PUGET CLEARANCE OUTLINE
CLEARANCE OUTLINE (INCLUDING ALL FLOAT)
SKETCH NO. 3